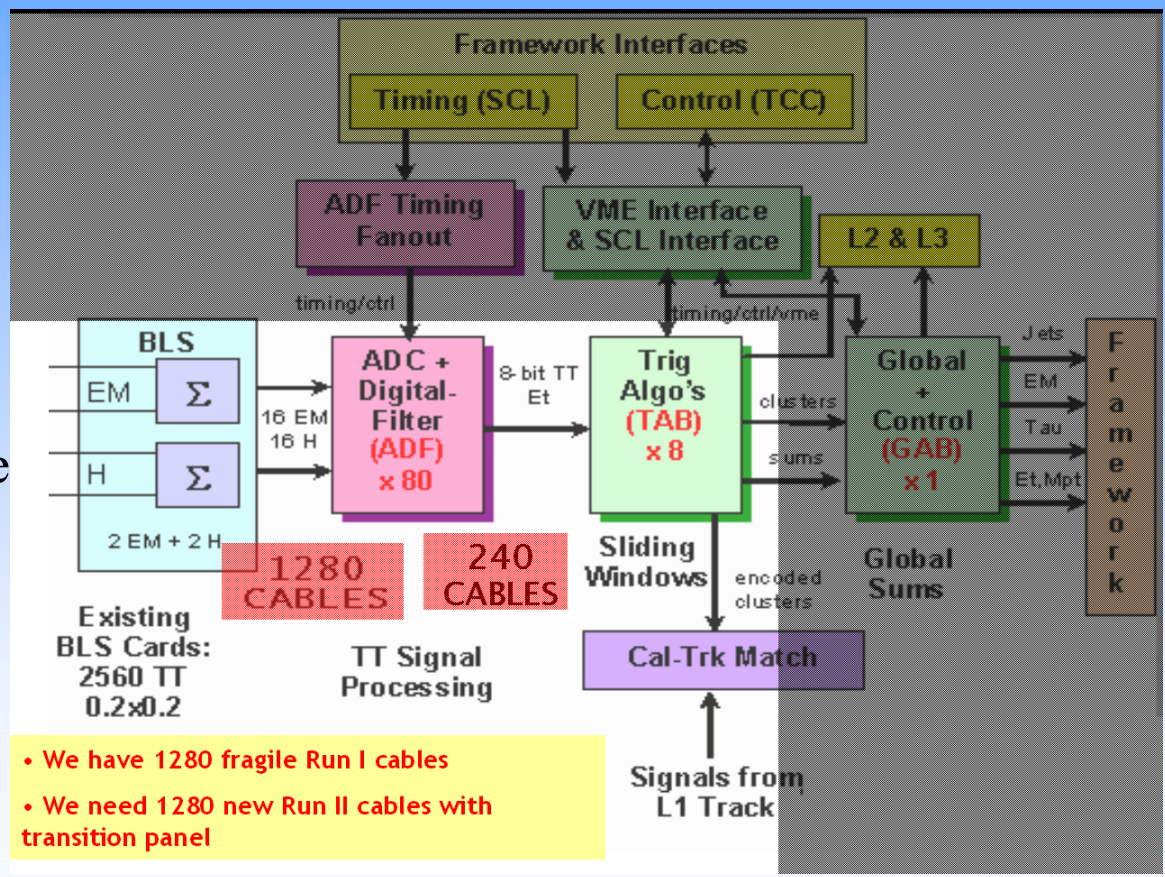
Level 1 Trigger

BLS-to-ADF Transition System

DØ 09/23/2004 – Alan Stone – Mario Camuyrano

Run IIb Upgrade

The RunIIb upgrade on the L1 Trigger electronics will replace the existing trigger electronics with a new more compact system.



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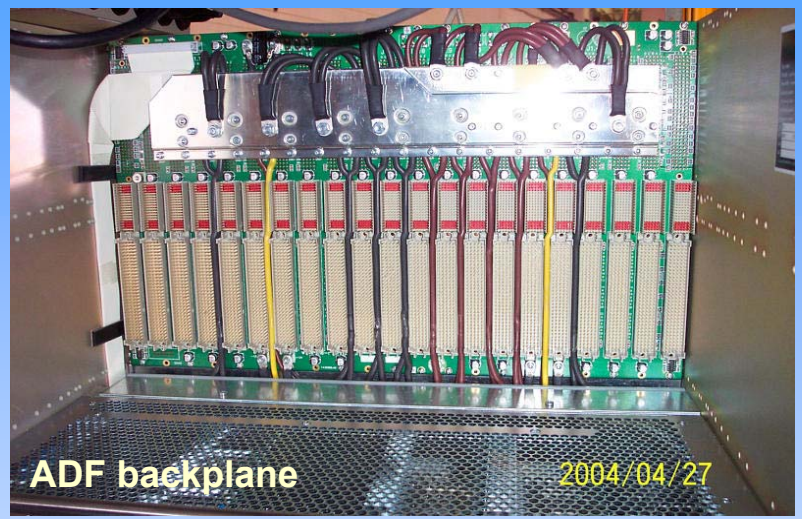
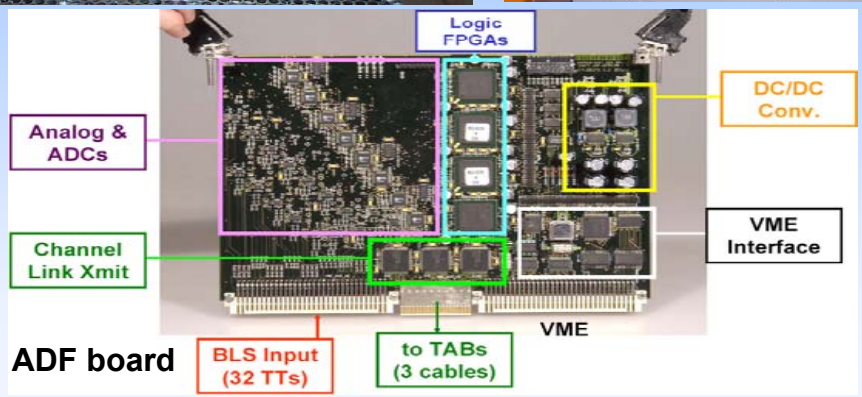
ADF

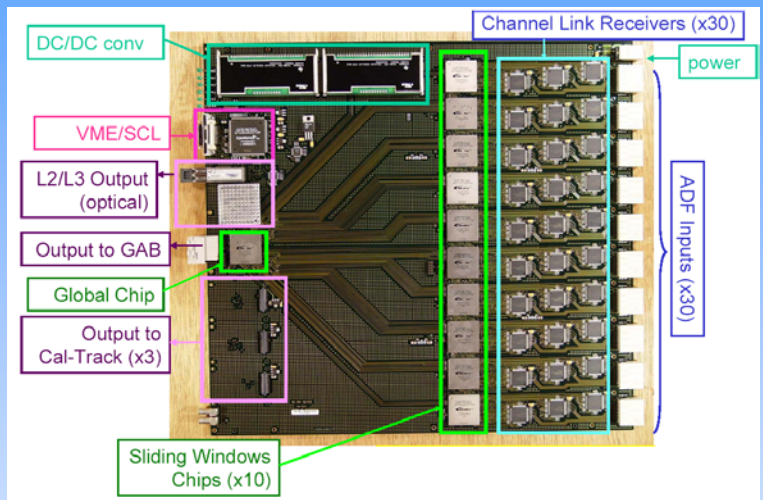


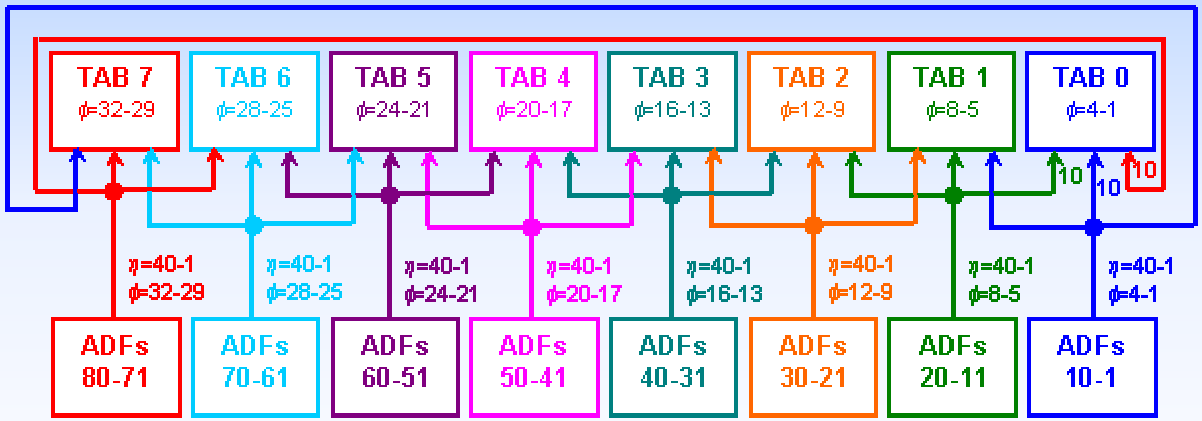


The existing 1280 BLS cables have to be connected in the ADC Digital Filter system (ADF) housed in a 6U VME Crate containing 20 ADF boards with 16 channels each.

TAB

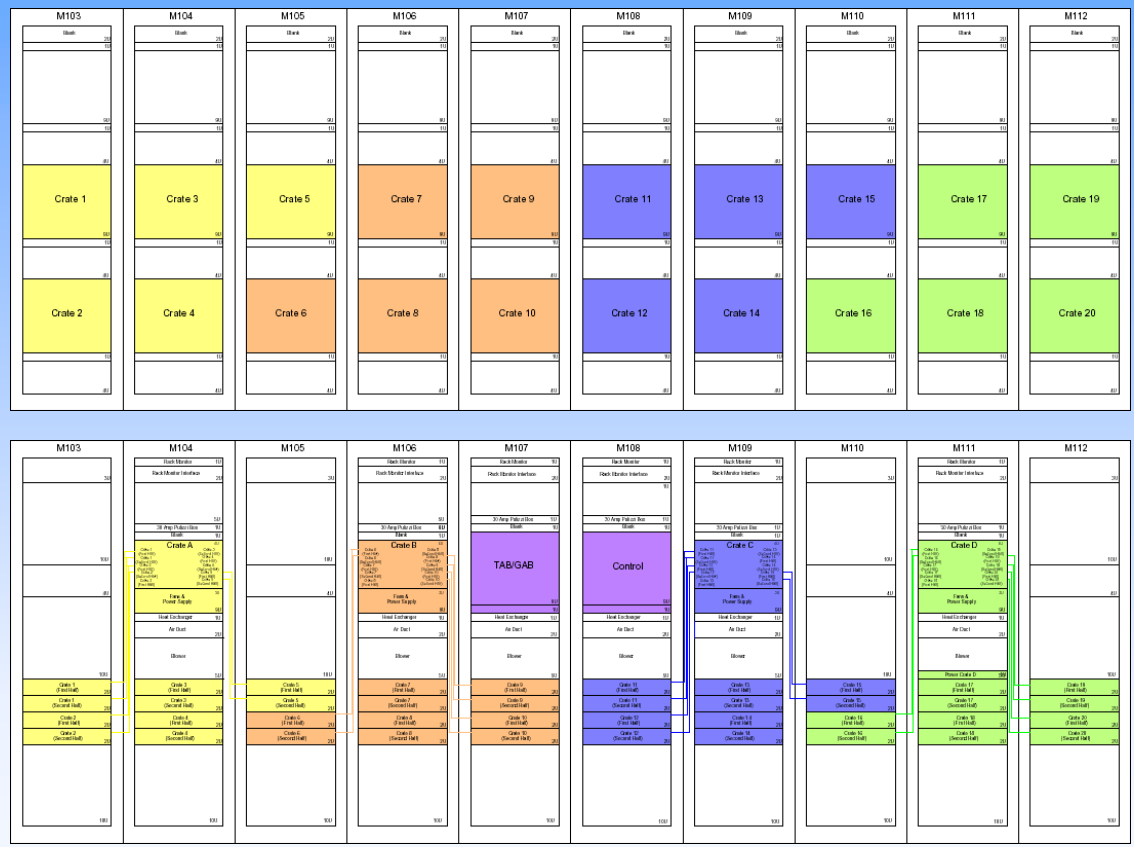
Trigger Algorithm Board (TAB) prototype which receives inputs from 30 different ADF cards and 480 TTs.





L1 Cal Tracking MCH1 Rack Assignments

Existing and proposed calorimeter trigger rack layouts. The color code shows how the calorimeter trigger inputs will be reassigned from the existing trigger crates to the new ADF crates.



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Level 1 Calorimeter Cabling

The new trigger layout will reuse the existing cables, which provides the trigger pick-off signal from the calorimeter platform BLS racks to MCH1.

These cables are commonly referred to as “the Blue cables” and were installed at the very beginning of Run I. They are made of 0.1 inch diameter ribbon coaxial cable. Four adjacent coaxial cables in one ribbon are used to carry the differential EM and HD signals for a given trigger tower. This ribbon coaxial cable was made by a company called New England Wire.

130 feet to North End-Cap Calorimeter [EC]

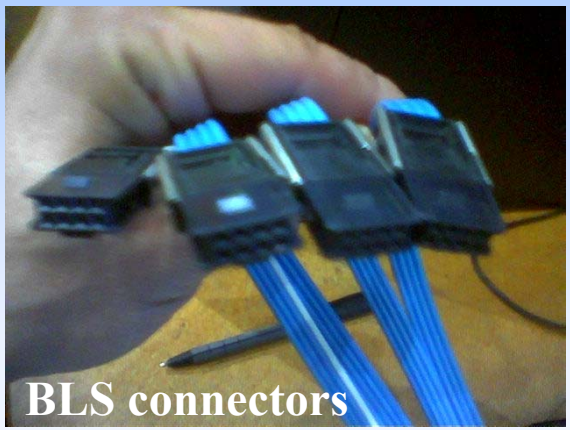
150 feet to Central Calorimeter [CC]

180 feet to South End-Cap Calorimeter [EC]

Level 1 Calorimeter Cabling

The Blue cables are terminated with an 8 pin Amphenol connector at the MCH1 end. The ADF boards require a 20 pin AMP connector.

Extension cables and patch panels to make the transition from the Blue cables to the ADF boards is needed.


BLS connectors

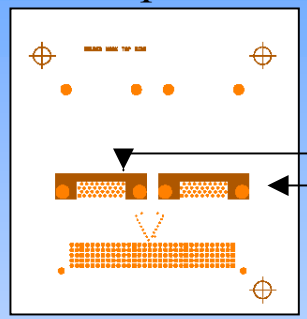

ADF ERNI connectors

Patch Panel

Paddle Card

2 Pleated Foil Cables input from the Patch Panel Card

ERNI connector output to the ADF backplane

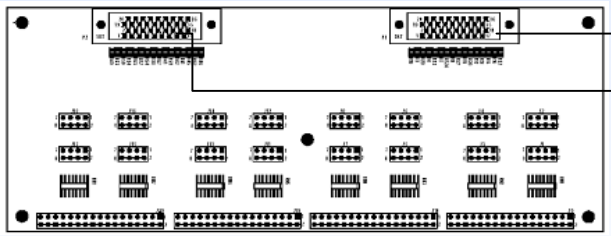


3M Pleated Foil Cables

Patch Panel Card (2 per Patch Panel)

16 BLS inputs

2 Pleated Foil Cables output to the Paddle Card)



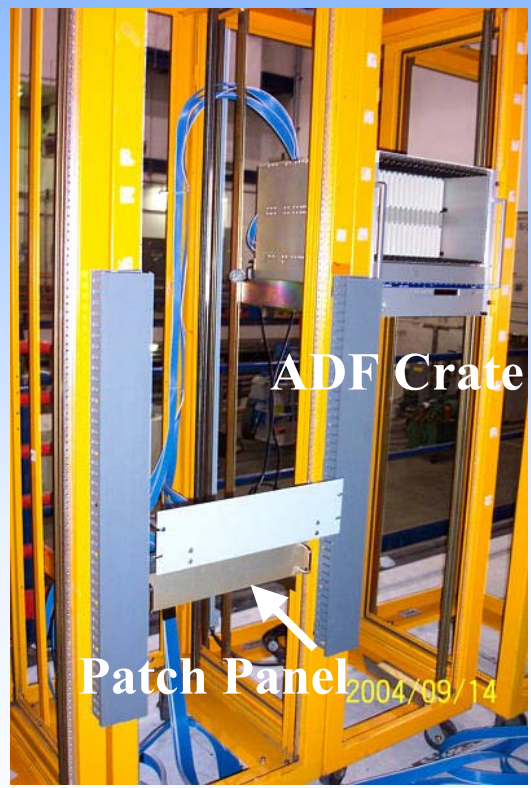
Design made by John Foglesong

Patch Panel Layout

A possible solution is run the BLS cables from the back

2 Patch Panel Cards

4 Pleated Foil Cables



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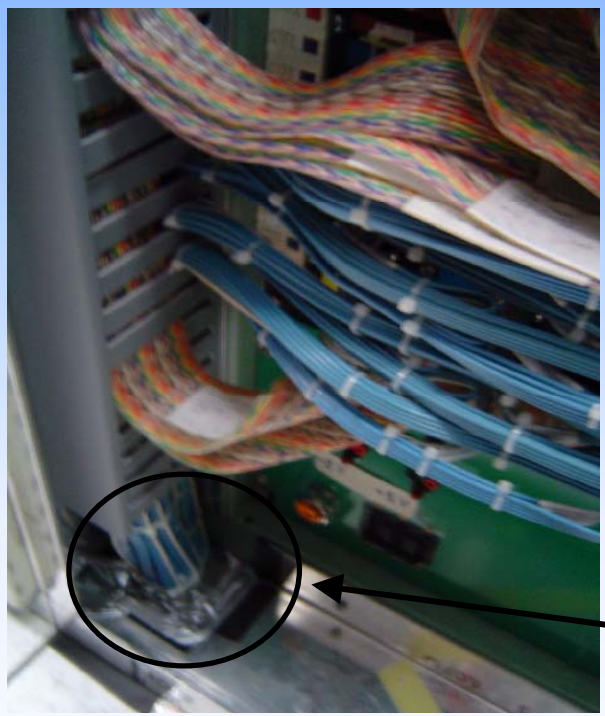
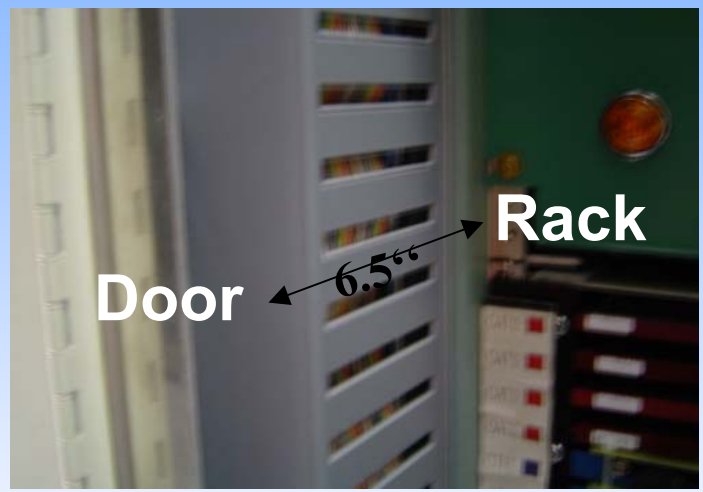
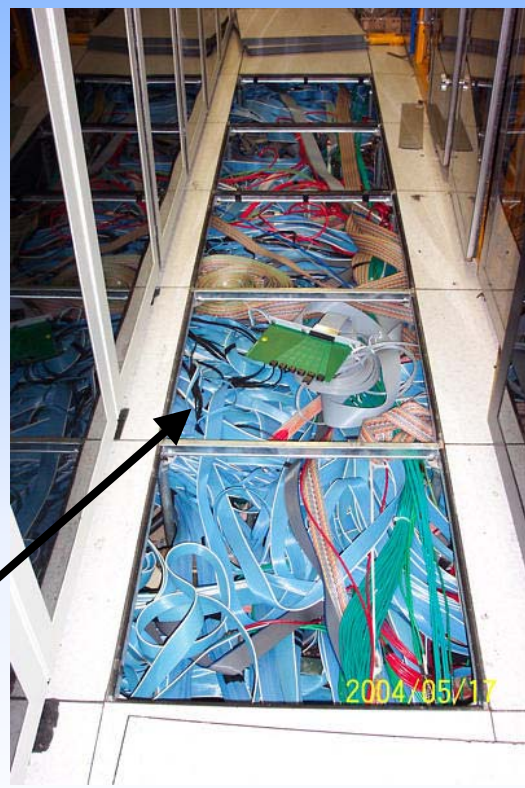
Current BLS Cables Layout

- How the BLS cables are set.



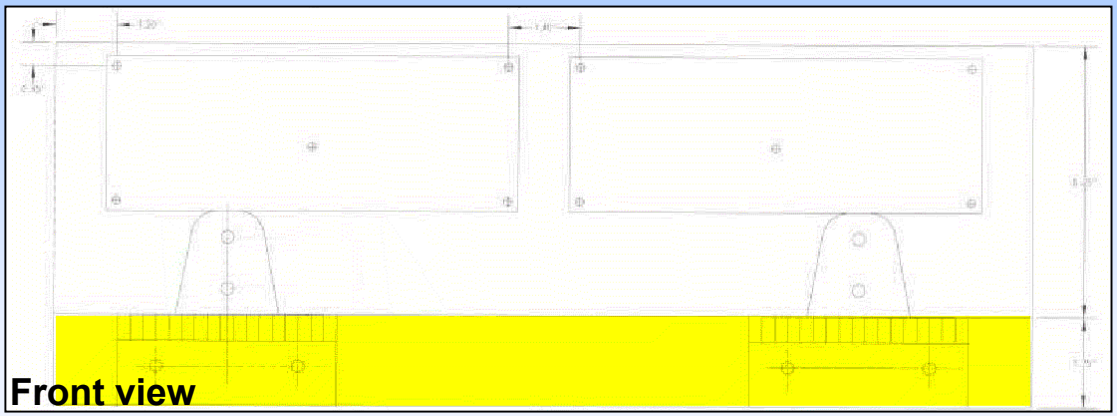


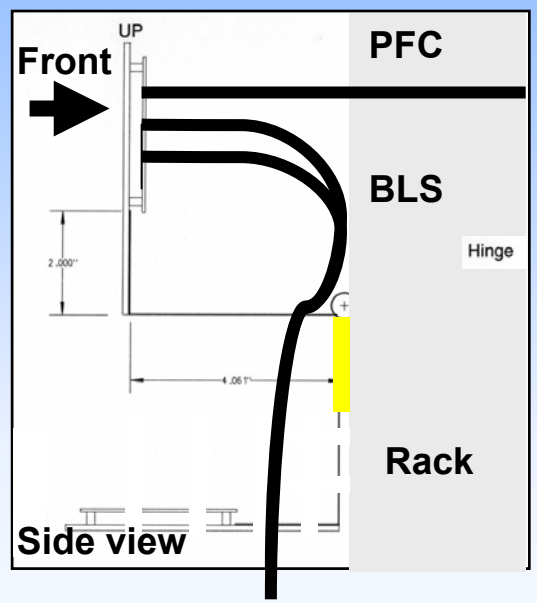


We decided to do not move the cables

PPC layout Design

- Patch Panel Card shift 5’’ out to the rack to keep the cables coming from the front.

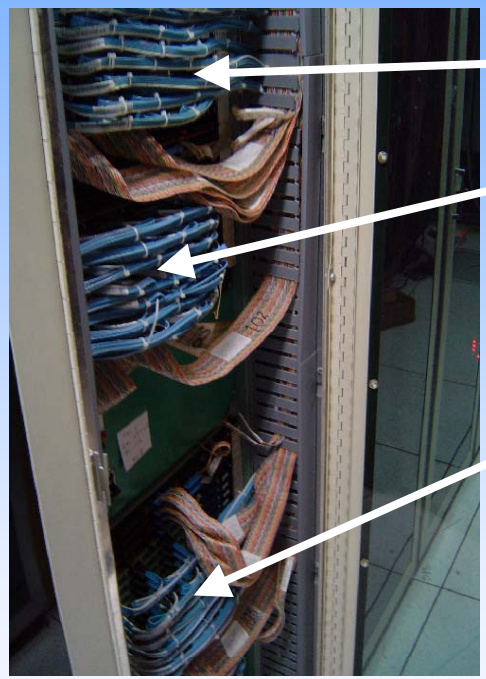


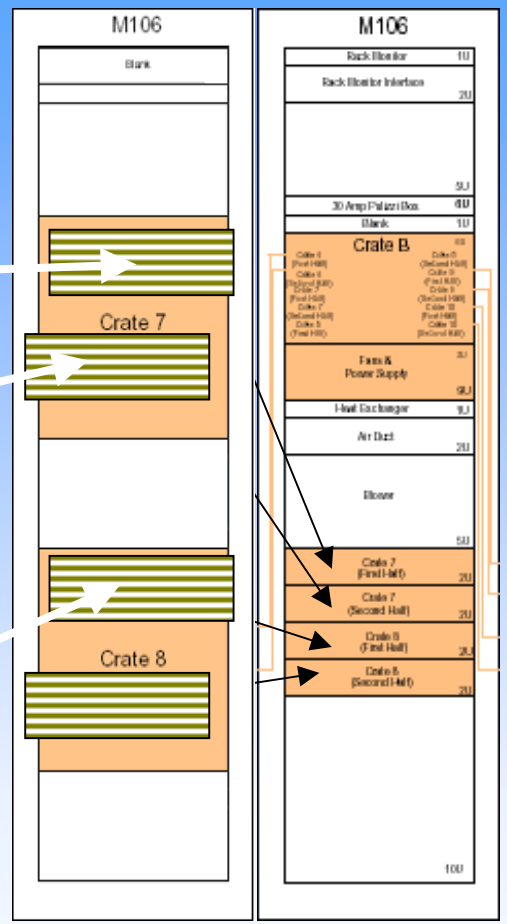


by John Foglesong

BLS Cables layout

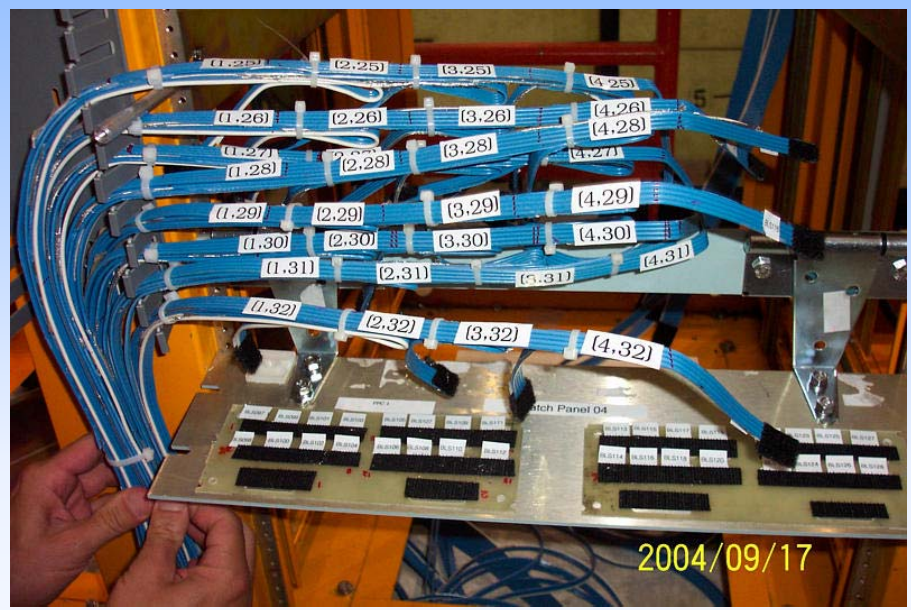
We are looking for the best Patch Panel location considering we need enough space to feet the ADF crates on racks M104 M106 M109 M111 and also TAB/GAB on crate M107 and Control on rack M108. We estimate around 17U





Mock-up

We reproduce the current BLS cable layout for 32 BLS cables to test the design and to optimize the procedure to connect the cables



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Signal and Impedance Matching Tests

We want to test how the front end patch panel is going to modify the BLS signal.

- Impedance matching will be tested.
  - Each board has the possibility to add resistors to correct impedance differences.
- Signal integrity coming out of the Patch Panel
  - Inserting a signal with the same shape of the BLS signal
  - Measuring the attenuation for 1 to 20 MHz